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REMARKS

Claims 1 and 5-18 are all the claims presently being examined in the application. Claims 1, 5 and 11 have been amended. Applicant thanks the Examiner for the telephone interview of July 2, 2003. Based on the interview, the Examiner indicated that the amendment to the claims appears to overcome the cited references.

With respect to the prior art rejections, claims 1, 7-9, and 11-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Makoto Yoshimura, JP 08-114802 A (provided by the applicant) in view of Hashimoto (U.S. Pat. No. 5,442,470). Claims 5, 6, and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Makoto in view of Hashimoto as applied to claims 1, 7-9, and 11-18 and in view of Toshiya et al., JP 06-051308 A.

These rejections are respectfully traversed in view of the following discussion.

Entry of this 1.116 Amendment is proper. Since the amendments above narrow the issues for appeal and since such features were in the claims earlier, such amendments do not raise a new issue requiring further searching and/or consideration by the Examiner. As such, entry of this Amendment is believed to be proper and is earnestly solicited.

It is noted that the amendments are made only to more particularly define the invention and not for distinguishing the invention over the prior art, for narrowing the scope of the claims, or for any reason related to a statutory requirement for patentability.

It is further noted that, notwithstanding any claim amendments made herein, Applicant's intent is to encompass equivalents of all claim elements, even if amended herein or later during prosecution.

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I. THE CLAIMED INVENTION

Applicant's invention, as disclosed and claimed, for example by claim 1, and similar claims 5 and 11, are directed to a liquid crystal display panel.

The display panel includes a liquid crystal display panel held between an upper frame and a lower frame, the upper frame including a display window. The upper frame and the lower frame are coupled to each other via a foldable U-shaped portion.

One of the upper and lower frames includes a first stepped protrusion formed in the vicinity of its end, and the other frame of one of the upper and lower frames has a second stepped protrusion formed in the vicinity of its end. The second stepped protrusion is fitted inside the first stepped protrusion. The first stepped protrusion and the second stepped protrusion are formed to differ from each other in a protruding direction. (See Page 8, line 14 - Page 9, line 6; Page 10, lines 24-27; Page 11, lines 1-5; Page 11, line 15 - Page 12, line 5; Page 12, lines 19-25; and Figures 3, 4 and 7).

Conventional liquid crystal displays include a lower frame, an upper frame and an LCD panel coupled and fixed by many parts, e.g., spacers, screws and caulking, without any protrusions, let alone, stepped protrusions. However, the conventional displays with the large variety of parts and materials tend to increase manufacturing complexity and errors in positioning parts during assembly, and thus increase the cost of parts and labor. (See Page 2, lines 1-9; Page 3, lines 3-9; and Figures 1 and 2).

An aspect of the present invention includes one of the upper and lower frames includes a first stepped protrusion formed in the vicinity of its end, and the other frame of one of the upper and lower frames has a second stepped protrusion formed in the vicinity of its

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end. These protrusions support and fix the upper and lower frames together while also being used to help mount the liquid crystal display panel to the intermediate frame, and thus eliminate the need for additional parts machined into the frame whereby the parts count is decreased along with a reduction in cost. (Page 8, line 14 - Page 9, line 13; Page 11, lines 15-19; and Page 12, line 19-25).

As a result of this inventive structure, a liquid crystal display is provided with a reduced profile, size, weight and cost. (See Page 3, lines 3-9).

II. THE PRIOR ART REJECTIONS

A. The § 103(a) Rejection Based on Makoto in view of Hashimoto

First, the references, separately, or in combination, fail to teach, disclose or provide a reason or motivation for being combined. In particular, Makoto pertains to a holder of a plane display device where the holder includes a first holding member and a second holding member. The holding members are coupled via two hinges. (See Makoto at Abstract; and Figures 1 and 2).

Makoto is specifically directed to facilitate the handling of a plane display device and prevent the failure of the holder of the plane display device by detaining the plane display with detaining members disposed at the holding members and using a pair of fitting members. (See Makoto at Abstract).

By contrast, Hashimoto. ("Hashimoto") does not have the same aim as Makoto.

Hashimoto discloses a liquid crystal display device including "a liquid crystal panel and a circuit board for driving the liquid crystal panel are electrically connected through a flexible printed circuit." Hashimoto is specifically directed to resolving the problem of "providing a suitable electrical insulation member for electrically isolating the metallic

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framework from a circuit board” through the use of a frame member having a substantially U-shaped cross-sectional shape. (See Hashimoto at Abstract; Column 1, lines 10-15; Column 2, lines 17-30 and 42-54).

Nothing within Hashimoto, which pertains to electrically isolating a metallic framework, suggests a holder of a plane display device including the plane display with detaining members disposed at the holding members and using a pair of fitting members as disclosed in Makoto. Thus, Makoto teaches away from being combined with another invention, such as, Hashimoto.

Therefore, one of ordinary skill in the art would not have combined these references, absent hindsight. It is clear that the Examiner has simply read Applicant's specification and conducted a keyword search to yield Makoto and Hashimoto. Further, the Examiner provides no motivation or reason to combine other than to assert that it would have been obvious to one having ordinary skill in the art at the time to modify the display of Makoto by attaching frames with a foldable U-shaped portion “so that a display device [is] greatly improved both in resistance to vibration and to impact ...” per the teachings of Hashimoto. (See Office Action at Page 3, last line-Page 4, line 4). Such an assertion does not take into account the distinct structural differences of Makoto and Hashimoto as indicated above, and further discussed below. Thus, the Examiner's conclusion attempts to solve a problem which does not exist with either Makoto or Hashimoto.

Second, even if combined, the references do not teach or suggest the features of independent claim 1, and similar independent claim 11, including one of the upper and lower frames includes a first stepped protrusion formed in the vicinity of its end, and the other frame of one of the upper and lower frames has a second stepped protrusion formed in the vicinity of its end. (See Page 8, line 14-Page 9, line 13; Page 11, lines 1-5 and 15-24; Page

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12, lines 19-25; and Figures 4 and 5).

Rather, Makoto, as indicated above, discloses a holder of a plane display device where the holder includes a first holding member and a second holding member. The Examiner refers to Figures 1 and 3 of Makoto, and asserts that Makoto teaches a pair of "fitting members" with a "first protrusion" in the lower frame and a second protrusion in the upper frame where the "second protrusion" fits inside the first protrusion. Clearly, the second protrusion is cylindrical shaped and the first protrusion has a substantially cylindrical hole to receive the second protrusion. Based on this configuration, the protrusions fit within one another to help hold the upper frame and lower frame together upon being closed without appearing to help to mount the liquid crystal display panel to an intermediate frame. However, this cylindrical configuration likely requires the protrusions to be separately machined from the frame itself further increasing cost. (See Office Action at Page 3, 1st and 2nd Paragraphs; Makoto at abstract; and Figures 1 and 3).

In contrast, Applicant's invention discloses, teaches and suggests, including one of the upper and lower frames includes a first stepped protrusion formed in the vicinity of its end, and the other frame of one of the upper and lower frames has a second stepped protrusion formed in the vicinity of its end. (See Page 9, lines 7-13; Page 11, lines 1-5 and 15-24; Page 12, lines 19-25; and Figures 4 and 5). The stepped shape (not a cylindrical shape, as in Makoto) is used to fix the upper frame and the lower frame together.

In addition, "the liquid crystal display panel is held between the upper frame having the display window and the lower frame by using an intermediate frame where the intermediate frame has depressions formed in the vicinity of its ends, the depressions to be fitted to the first [stepped] protrusions. The intermediate frame is fixed to the frame so that the liquid crystal display panel is fixed to the upper frame or lower frame." (See Page 8, line

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14 - Page 9, line 6). Since the protrusions may be arranged in the liquid crystal display mounting portions of the frames, and are stepped shaped, the stepped protrusions may also function to couple the intermediate frame to the LCD display. As the protrusions are stepped shaped not cylindrical shaped as with the conventional Makoto structure, the protrusions may be integrated as a feature within the frame, and easily molded during production of the frame without being machined separately from the frame. Thus, this integrated feature further eliminates the need for expensive dies as disclosed in Makoto. (See Page 8, line 14 - Page 9, line 6; Page 10, lines 24-27; Page 11, lines 1-5; Page 11, line 15 - Page 12, line 5; Page 12, lines 19-25; and Figures 3, 4 and 7).

Consequently, the Makoto conventional structure is unsuitable to fix the upper and lower frames together while also be used to help mount the liquid crystal display panel to the intermediate frame. The inventive configuration eliminates the need for additional parts machined into the frame whereby the parts count is decreased and thus reduces cost, size and weight. (Page 3, lines 3-9; Page 8, line 14 - Page 9, line 13; Page 11, lines 15-19; and Page 12, line 19-25). Makoto does not teach, suggest or disclose a liquid crystal display, including one of the upper and lower frames includes a first stepped protrusion formed in the vicinity of its end, and the other frame of one of the upper and lower frames has a second stepped protrusion formed in the vicinity of its end.

Third, Hashimoto does not make up for the deficiencies of Makoto. Instead, Figure 2 of Hashimoto discloses a liquid crystal display device including "a liquid crystal panel and a circuit board for driving the liquid crystal panel are electrically connected through a flexible printed circuit" without disclosing any protrusions in the frame, let alone, stepped protrusions. Hashimoto discloses "[h]oles are provided in both ends of each of the frame members. Thus, there are four such holes 11. These holes can be used as mounting holes for

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mounting the entire liquid crystal display device on an apparatus and, at the same time, can be used as locating holes which provide position references for correctly locating the frame members during attachment to panel.” (See Hashimoto at Abstract; Column 7, lines 37-45; and Figures 2 and 5). None of the holes is a protrusion, whereas Applicant’s invention discloses the upper and lower frames includes a first stepped protrusion formed in the vicinity of its end, and the other frame of one of the upper and lower frames has a second stepped protrusion formed in the vicinity of its end. Accordingly, Hashimoto is focused on providing a suitable electrical insulation member for electrically isolating the metallic framework from a circuit board” through the use of a frame member having a substantially U-shaped cross-sectional shape. (See Hashimoto at Abstract; Column 1, lines 10-15; Column 2, lines 17-30 and 42-54). Thus, in Hashimoto, the protrusions are not disclosed nor is it a concern as indicated by the claims.

Therefore, neither Makoto nor Hashimoto teaches or suggests including one of the upper and lower frames includes a first stepped protrusion formed in the vicinity of its end, and the other frame of one of the upper and lower frames has a second stepped protrusion formed in the vicinity of its end, as recited in claim 1, and similar claim 11, i.e., Applicant’s invention. This invention fixes the upper and lower frames together while also helping to mount the liquid crystal display panel to the intermediate frame, and thus eliminate the need for additional parts machined into the frame whereby the parts count is decreased along with cost, size and weight. (Page 3, lines 3-9; Page 8, line 14 - Page 9, line 13; Page 11, lines 15-19; and Page 12, line 19-25).

For at least the reasons outlined above, Applicant respectfully submits that neither Makoto nor Hashimoto teach or suggest all of the features of the independent claim 1 and 11, and dependent claims 7-9 and 12-18.

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Regarding dependent claims 7-9 and 12-18, which depend respectively from claims 1 and 11, these claims are patentable not only by virtue of their dependency from their respective independent claims, but also by the additional limitations they recite.

For the reasons stated above, the claimed invention, and the invention as cited in independent claim 1 and 11, should be fully patentable over the cited references.

B. The Toshiya Reference

To make up for the deficiencies of Makoto and Hashimoto, the Examiner relies on Toshiya, et al. ("Toshiya"). Toshiya fails to do so.

First, Toshiya does not have the same aim as Makoto or Hashimoto as discussed above, and the urged combination would not have been made, absent hindsight.

Toshiya is non-analogous art and discloses a liquid crystal display including a liquid crystal cell and illuminating means supported in a frame with a light source supported by the frame and a fixing means without any protrusions, let alone, stepped protrusions. The supporting frame is "constituted of resin molded goods obtained by vacuum molding or resin molded goods obtained by foaming." (See Toshiya at Abstract). Accordingly, Toshiya is focused on providing a "small-sized, thin and durable liquid crystal display device which is easy to assemble." (See Toshiya at Abstract).

Nothing within Toshiya suggests a holder of a plane display device including the plane display with detaining members disposed at the holding members and using a pair of fitting members as disclosed in Makoto. Toshiya also does not suggest a "suitable electrical insulation member for electrically isolating the metallic framework from a circuit board" as disclosed in Hashimoto. Thus, Makoto and Hashimoto teach away from being combined with

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each other as well as another invention, such as, Toshiya. (See Hashimoto at Abstract; Column 1, lines 10-15; Column 2, lines 17-30 and 42-54).

Therefore, one of ordinary skill in the art would not have combined these references, absent hindsight.

Second, even if combined, Toshiya does not make up for the deficiencies of either Makoto or Hashimoto as indicated above. That is, the references do not teach or suggest the features of independent claim 5, including the upper frame and the lower frame comprise a plurality of stepped protrusions. (Page 8, line 25-Page 9, line 16; Page 22, lines 15-19).

Toshiya discloses a liquid crystal display including a liquid crystal cell and illuminating means supported in a frame with a light source supported by the frame and a fixing means. However, Toshiya does not disclose, teach or suggest any stepped protrusions, let alone, the feature of including the upper frame and the lower frame comprise a plurality of stepped protrusions as disclosed in Applicant's invention. (Toshiya at Abstract; and Page 8, line 25-Page 9, line 16; Page 22, lines 15-19). at Abstract).

In addition, according to claim 10, Applicant's invention teaches that "a surface of the resin material comprises an antistatic agent." This agent is "used to reduce the electrification of the liquid crystal display during assembly and the like. This allows an improvement in the yield of the liquid crystal display." (See Page 8, lines 3-7; and Page 10, lines 17-18). Please note that the Office Action does not provide any references or arguments to reject this claim, and Toshiya does not disclose, teach or suggest the features of claim 10, including any antistatic agent. Thus, Applicant traverses the rejection. Accordingly, claim 10 should be allowed. (See Office Action, Pages 4-5).

For at least the reasons outlined above, Applicant respectfully submits that none of

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Makoto, Hashimoto or Toshiya teach or suggest all of the features of the independent claim 5, and related dependent claims 6 and 10.

Regarding dependent claims 6 and 10, these claims are patentable not only by virtue of their dependency from the respective independent claim, but also by the additional limitations they recite.

For the reasons stated above, the claimed invention, and the invention as cited in independent claim 5, should be fully patentable over the cited references.

III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims I and 5-18, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.


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The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

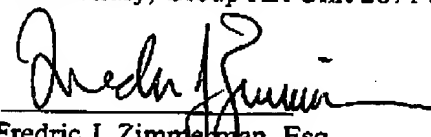
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CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that I am filing this Amendment by facsimile with the United States Patent and Trademark Office to Examiner Tarifur R. Chowdhury, Group Art Unit 2871 at fax number (703) 872-9323 this 9th day of July, 2003.


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